IN THE CLAIMS:

The text of all pending claims, 1-45, is set forth below. The status of each claim is indicated with one of (original), (currently amended), or (previously presented).

Please AMEND claims 37, 39 and 41 in accordance with the following:

1. (previously presented) An optical amplifying apparatus comprising:

at least two mutually exclusive wavelength bands, each having at least two channels;

a plurality of optical adjusting means provided for the respective wavelength bands, for adjusting average optical power per single wavelength channel of light beams, and wavelengths of the respective wavelength bands having approximately equal channel powers;

wavelength-multiplexing means for wavelength multiplexing outputs of said respective optical adjusting means; and

controlling means for performing control so that an output of optical adjusting means for adjusting average optical power per single wavelength channel of shorter-wavelength-band light among said plurality of optical adjusting means becomes larger than an output of optical adjusting means for adjusting average optical power per single wavelength channel of longer-wavelength-band light among said plurality of optical adjusting means, and approximate channel powers of the shorter wavelength band light is greater than approximate channel powers of the longer wavelength band light.

2. (original) The optical amplifying apparatus according to claim 1, further comprising:

wavelength-demultiplexing means for wavelength-demultiplexing input light into light beams in respective wavelength bands; and

outputting each of the light beams in the respective wavelength bands to said respective optical adjusting means.

3. (previously presented) The optical amplifying apparatus according to claim 1, wherein said controlling means further controls the outputs of said respective optical adjusting means so that average optical power per single wavelength channel of the respective wavelength bands at a predetermined point will become approximately identical when output light of the wavelength-multiplexing means travels to the predetermined point.

4. (previously presented) The optical amplifying apparatus according to claim 1,

wherein said controlling means further controls the outputs of said respective optical adjusting means so that powers calculated by subtracting noise powers in the respective optical adjusting means from average optical power per single wavelength channel of said respective wavelength bands at a predetermined point will become approximately identical when output light of the wavelength-multiplexing means travels to the predetermined point.

5. (original) The optical amplifying apparatus according to claim 1, further comprising a light source for supplying light to respective input light beams of said plurality of optical adjusting means.

6. (original) The optical amplifying apparatus according to claim 2, further comprising an optical transmission line connected to said wavelength-demultiplexing means for transmitting said input light, and a light source for supplying light to said optical transmission line.

7. (previously presented) The optical amplifying apparatus according to claim 2, wherein said controlling means determines a difference between the output of said optical adjusting means for adjusting the average optical power per single wavelength channel of said shorter-wavelength-band light and the output of said optical adjusting means for adjusting the average optical power per single wavelength channel of said longer-wavelength-band light based on at least one of stimulated Raman scattering in an optical transmission line connected to an output side of said optical amplifying apparatus, a loss in said optical transmission line, a loss in said wavelength-demultiplexing means, and a loss in said wavelength-multiplexing means.

8. (original) The optical amplifying apparatus according to claim 1, wherein said light beams are a WDM optical signal in a first wavelength band and a WDM optical signal in a second wavelength band having longer wavelength than the first wavelength band, and wherein the number of channels of the WDM optical signal in the first wavelength band is increased or decreased.

9. (original) The optical amplifying apparatus according to claim 1, wherein said light beams are a WDM optical signal in a first wavelength band and a WDM optical signal in a second wavelength band having longer wavelength than the first wavelength band, and wherein

the number of channels of the WDM optical signal in the second wavelength band is increased or decreased.

10. (original) The optical amplifying apparatus according to claim 3, further comprising detecting means for detecting said optical powers of said respective wavelength bands at said predetermined point, wherein

said controlling means further controls the outputs of said respective optical adjusting means based on an output of the detecting means.

11. (original) The optical amplifying apparatus according to claim 4, further comprising detecting means for detecting said optical powers of said respective wavelength bands at said predetermined point, wherein

said controlling means further controls the outputs of said respective optical adjusting means based on an output of said detecting means.

12. (original) The optical amplifying apparatus according to claim 10, wherein said light beams are WDM optical signals, and wherein

said detecting means detects optical power of one of the WDM optical signals that corresponds to a shortest-wavelength channel.

13. (original) The optical amplifying apparatus according to claim 11, wherein said light beams are WDM optical signals, and wherein

said detecting means detects optical power of one of the WDM optical signals that corresponds to a shortest-wavelength channel.

14. (original) The optical amplifying apparatus according to claim 1, wherein said plurality of optical adjusting means are optical amplifiers for amplifying said light beams.

15. (original) The optical amplifying apparatus according to claim 1, wherein said plurality of optical adjusting means are optical attenuators for attenuating said light beams.

16. (previously presented) An optical sending apparatus comprising:

at least two mutually exclusive wavelength bands, each having at least two channels;

a plurality of optical sending means provided for the respective wavelength bands, and

for generating WDM optical signals in the respective wavelength bands, wavelengths of the respective wavelength bands having approximately equal channel powers;

a plurality of optical adjusting means connected to said respective optical sending means, for adjusting optical powers of light beams;

wavelength-multiplexing means for wavelength-multiplexing outputs of said respective optical adjusting means for the respective wavelength bands; and

controlling means for performing control so that an output of optical adjusting means for adjusting average optical power per single wavelength channel of shorter-wavelength-band light among said plurality of optical adjusting means becomes larger than an output of optical adjusting means for adjusting average optical power per single wavelength channel of longer-wavelength-band light among said plurality of optical adjusting means, and approximate channel powers of the shorter wavelength band light is greater than approximate channel powers of the longer wavelength band light.

17. (previously presented) The optical sending apparatus according to claim 16, wherein said controlling means further controls the outputs of said respective optical adjusting means so that average optical power per single wavelength channel of the respective wavelength bands at a predetermined point will become approximately identical when output light of said wavelength-multiplexing means travels to the predetermined point.

18. (previously presented) The optical sending apparatus according to claim 16, wherein said controlling means further controls the outputs of said respective optical adjusting means so that powers obtained by eliminating noise powers in said respective optical adjusting means from average optical power per single wavelength channel of the respective wavelength bands at a predetermined point will become approximately identical when output light of said wavelength-multiplexing means travels to the predetermined point.

19. (original) The optical sending apparatus according to claim 16, wherein said controlling means determines a difference between the output of said optical adjusting means for adjusting the optical power of said shorter-wavelength-band light and the output of said optical adjusting means for adjusting the optical power of said longer-wavelength-band light based on at least one of stimulated Raman scattering in an optical transmission line connected to an output side of said optical sending apparatus, a loss in said optical transmission line, and a loss in said wavelength-multiplexing means.

20. (original) The optical sending apparatus according to claim 16, wherein said WDM optical signals in the respective wavelength bands are a WDM optical signal in a first wavelength band and a WDM optical signal in a second wavelength band having longer wavelengths than the first wavelength band, and wherein

the number of channels of said WDM optical signal in the first wavelength band is increased or decreased.

21. (original) The optical sending apparatus according to claim 16, wherein said WDM optical signals in the respective wavelength bands are a WDM optical signal in a first wavelength band and a WDM optical signal in a second wavelength band having longer wavelengths than the first wavelength band, and wherein the number of channels of said WDM optical signal in the second wavelength band is increased or decreased.

22. (original) The optical sending apparatus according to claim 17, further comprising detecting means for detecting said optical powers of said respective wavelength bands at said predetermined point, wherein

said controlling means further controls the outputs of said respective optical adjusting means based on an output of said detecting means.

23. (original) The optical sending apparatus according to claim 18, further comprising detecting means for detecting one of said optical powers of said respective wavelength bands at said predetermined point, wherein

said controlling means further controls the outputs of said respective optical adjusting means based on an output of said detecting means.

24. (original) The optical sending apparatus according to claim 22, wherein said detecting means detects optical power of one of the WDM optical signals that corresponds to a shortest-wavelength channel.

25. (original) The optical sending apparatus according to claim 23, wherein said detecting means detects optical power of one of the WDM optical signals that corresponds to a shortest-wavelength channel.

26. (original) The optical sending apparatus according to claim 16, wherein each of said plurality of optical sending means generates each WDM optical signal respectively in each of said plurality of wavelength bands by generating a plurality of optical signals having different optical powers and wavelength-multiplexing said plurality of optical signals on a wavelength band basis.

27. (original) The optical sending apparatus according to claim 16, wherein said plurality of optical adjusting means are optical amplifiers for amplifying light beams.

28. (original) The optical sending apparatus according to claim 16, wherein said plurality of optical adjusting means are optical attenuators for attenuating light beams.

29. (previously presented) An optical transmission system comprising:

an optical sending apparatus generating an optical signal of a plurality of wavelength bands;

an optical transmission line transmitting the generated said optical signal;

an optical receiving apparatus receiving and processing said optical signal transmitted through said optical transmission line; and

at least one optical amplifying apparatus provided on the optical transmission line, comprising:

wavelength-demultiplexing means for wavelength-demultiplexing said optical signal on a wavelength band basis;

at least two mutually exclusive wavelength bands, each having at least two channels;

a plurality of optical adjusting means for adjusting optical powers of each said optical signal in the respective wavelength bands, that are output from said wavelength-demultiplexing means, and wavelengths of the respective wavelength bands having approximately equal channel powers;

wavelength-multiplexing means for wavelength-multiplexing outputs of said respective optical adjusting means; and

controlling means for performing control so that an output of optical adjusting means for adjusting average optical power per single wavelength channel of shorter-wavelength-band light among said plurality of optical adjusting means becomes larger than an output of optical adjusting means for adjusting average optical power per single

wavelength channel of longer-wavelength-band light among said plurality of optical adjusting means, and approximate channel powers of the shorter wavelength band light is greater than approximate channel powers of the longer wavelength band light.

30. (previously presented) The optical transmission system according to claim 29, wherein said controlling means of said optical amplifying apparatus further controls the outputs of said respective optical adjusting means so that average optical power per single wavelength channel of the optical signals in the respective wavelength bands at a predetermined point will become approximately identical when an output optical signal of said optical amplifying apparatus travels to the predetermined point.

31. (previously presented) The optical transmission system according to claim 29, wherein said controlling means of said optical amplifying apparatus further controls the outputs of said respective optical adjusting means so that powers obtained by eliminating noise powers in said respective optical adjusting means from average optical power per single wavelength channel of the optical signals in said respective wavelength bands at a predetermined point will become approximately identical when an output optical signal of said optical amplifying apparatus travels to the predetermined point.

32. (original) The optical transmission system according to claim 29, wherein said optical amplifying apparatus further comprises a light source for supplying light to an optical transmission line through which an input optical signal is transmitted.

33. (original) The optical transmission system according to claim 29, wherein said optical sending apparatus generates said optical signal of said plurality of wavelength bands by generating said plurality of optical signals having different optical powers and wavelength-multiplexing the plurality of optical signals on a wavelength band basis.

34. (previously presented) The optical transmission system according to claim 29, wherein said optical receiving apparatus comprises a spectrum detecting section for detecting a spectrum of the optical signal and outputting a result of said detection to the optical sending apparatus, and wherein

said optical sending apparatus generates said optical signal of said plurality of wavelength bands by generating sets of optical signals having different optical powers based on

the detection result of the spectrum detecting section and wavelength-multiplexing the sets of optical signals on a wavelength band basis.

35. (original) The optical transmission system according to claim 29, wherein said plurality of optical adjusting means of the optical amplifying apparatus are optical amplifiers for amplifying optical signals.

36. (original) The optical sending apparatus according to claim 29, wherein said plurality of optical adjusting means of the optical amplifying apparatus are optical attenuators for attenuating optical signals.

37. (currently amended) A method of amplifying light comprising:

providing at least two mutually exclusive wavelength bands, each having at least two channels, and wavelengths of the respective wavelength bands having approximately equal channel powers;

amplifying light in a longer-wavelength band among a plurality of wavelength bands;

amplifying light in a shorter-wavelength band among said plurality of wavelength bands to have average optical power per single wavelength channel that is larger than average optical power per single wavelength channel of the amplified light in the longer-wavelength band, wherein approximate channel powers of the shorter wavelength band is greater than approximate channel powers of the longer wavelength band; and

wavelength-multiplexing light beams of the plurality of wavelength bands.

38. (previously presented) The optical amplifying method according to claim 37, further comprising determining a difference between an amplification output of the light in said shorter-wavelength band and an amplification output of the light in said longer-wavelength band so that average optical power per single wavelength channel of the respective wavelength bands at a predetermined point will become approximately identical when wavelength-multiplexed light of the said plurality of wavelength bands travels to the predetermined point, and wherein

said amplifying amplifies said light in the shorter-wavelength band so that it will have average optical power per single wavelength channel that is larger than average optical power per single wavelength channel of amplified light in said longer-wavelength band by said difference.

39. (currently amended) A method of amplifying light comprising:

generating a plurality of optical signals having different optical powers;

generating a plurality of WDM optical signals by wavelength-multiplexing said plurality of optical signals on a wavelength band basis;

providing at least two mutually exclusive wavelength bands, each having at least two channels, and wavelengths of the respective wavelength bands having approximately equal channel powers;

amplifying a WDM optical signal in a longer-wavelength band among the plurality of WDM optical signals;

controlling an optical gain of respective said wavelength bands to have average optical power per single wavelength channel that is larger than average optical power per single wavelength channel of the amplified WDM optical signal in said longer-wavelength band, wherein approximate channel powers of the respective wavelength bands are greater than approximate channel powers of said longer wavelength band; and

wavelength-multiplexing said plurality of WDM optical signals.

40. (previously presented) The optical amplifying method according to claim 39, further comprising determining a difference between an amplification output of the WDM optical signal in said shorter-wavelength band and an amplification output of the WDM optical signal in said longer-wavelength band so that average optical power per single wavelength channel of the respective WDM optical signals at a predetermined point will become approximately identical when a wavelength-multiplexed optical signal of the plurality of WDM optical signals travels to the predetermined point, and wherein

said amplifying amplifies the WDM optical signal in said shorter-wavelength band so that it will have average optical power per single wavelength channel that is larger than average optical power per single wavelength channel of amplified light in the longer-wavelength band by said difference.

41. (currently amended) A method of inputting light comprising:

providing at least two mutually exclusive wavelength bands, each having at least two channels, and wavelengths of the respective wavelength bands having approximately equal channel powers;

making average optical power per single wavelength channel of a WDM optical signal in

a shorter-wavelength band larger than average optical power per single wavelength channel of a WDM optical signal in a longer-wavelength band among a plurality of WDM optical signals in respective wavelength bands, wherein approximate channel powers of the shorter wavelength band is greater than approximate channel powers of the longer wavelength band; and

inputting said plurality of WDM optical signals in the respective wavelength bands to an optical transmission line.

42. (previously presented) An optical amplifying apparatus comprising:

a wavelength demultiplexing unit to wavelength demultiplex optical signal light into light beams of respective wavelength bands;

at least two mutually exclusive wavelength bands, each having at least two channels;

a plurality of optical adjusting units provided for the respective wavelength bands, to individually adjust average optical power per single wavelength channel of the light beams, and wavelengths of the respective wavelength bands having approximate equal channel powers;

a wavelength multiplexing unit to wavelength multiplex outputs of the respective optical adjusting units; and

a control unit to perform control of the optical adjusting units so that an output of a respective optical adjusting unit for adjusting average optical power per single wavelength channel of shorter-wavelength-band light among the plurality of optical adjusting units becomes larger than an output of a respective optical adjusting unit for adjusting average optical power per single wavelength channel of longer-wavelength-band light among the plurality of optical adjusting units, and approximate channel powers of the shorter wavelength band light is greater than approximate channel powers of the longer wavelength band light.

43. (previously presented) An optical transmission system comprising:

an optical sending device to generate optical signal light of a plurality of wavelength bands;

an optical transmission line to transmit the optical signal light;

an optical receiving device to receive and process the optical signal light transmitted through the optical transmission line; and

at least one optical amplifying device provided on the optical transmission line, comprising:

a wavelength demultiplexing unit to wavelength demultiplex the optical signal light into light beams of the respective wavelength bands;

at least two mutually exclusive wavelength bands, each having at least two channels;

a plurality of optical adjusting units provided for the respective wavelength bands, to individually adjust optical powers of the light beams, and wavelengths of the respective wavelength bands having approximate equal channel powers;

a wavelength multiplexing unit to wavelength multiplex outputs of the respective optical adjusting units; and

a control unit to perform control of the optical adjusting units so that an output of a respective optical adjusting unit for adjusting average optical power per single wavelength channel of shorter-wavelength-band light among the plurality of optical adjusting units becomes larger than an output of a respective optical adjusting unit for adjusting average optical power per single wavelength channel of longer-wavelength-band light among the plurality of optical adjusting units, and approximate channel powers of the shorter wavelength band light is greater than approximate channel powers of the longer wavelength band light.

44. (previously presented) The optical amplifying apparatus according to claim 1, wherein

said controlling means performs control based on a result of calculating an average output power per single wavelength channel by dividing a total optical output power of each monitored adjusting means by a number of transmitted wavelengths in a wavelength band of an optical signal output from the wavelength-multiplexing means, notified from a predetermined point on an optical path, and comparing the product between each wavelength band.

45. (previously presented) The optical amplifying apparatus according to claim 1, wherein

said controlling means controls output power per each single wavelength channel in the shorter wavelength band to be larger than output power per each single wavelength channel in the longer wavelength band, by relatively changing a total output power of the optical adjusting means when a change in number of transmitted wavelengths occur.